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THE CURRENT EMPLOYMENT MARKET FOR ENGINEERS, SCIENTISTS, AND TECHNICIANS, OCTOBER 1965.

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DATA ON JOB OPENINGS FOR SELECTED ENGINEERING, SCIENTIFIC, AND TECHNICAL OCCUPATIONS, PROVIDED BY THE BUREAU OF EMPLOYMENT SECURITY AFFILIATES FROM FIELD REPORTS ON JUNE 1965 CONDITIONS IN 30 MAJOR LABOR AREAS, ARE PRESENTED IN THIS SEMIANNUAL REPORT. NATIONWIDE DEMAND IN THESE JOB CATEGORIES INCREASED AND BACKLOGS OF APPLICANTS DECREASED BECAUSE OF ADDED GOVERNMENT CONTRACTING, CONTINUED ECONOMIC EXPANSION, AND THE GROWTH OF RESEARCH AND DEVELOPMENT ACTIVITIES RELATING TO MEDICAL AND EDUCATIONAL SERVICES. DEMAND-SUPPLY RELATIONSHIPS TIGHTENED FOR DRAFTSMEN, ENGINEERS, AND TECHNICIANS, BUT NOT FOR CHEMISTS AND NATURAL SCIENTISTS. NEEDS EXPANDED IN COMMERCIAL AIRCRAFT, AEROSPACE, MACHINERY, AND STEEL PRODUCTION, AND IN CONSTRUCTION. DEMANDS EMPHASIZED PRODUCTION, DESIGN, AND TESTING SKILLS. DEMANDS REMAINED STRONG FOR SENIOR DESIGN CIVIL AND STRUCTURAL ENGINEERS, AND EXPANDED IN SOME INNOVATIVE ASPECTS OF THE SERVICE FIELDS OF EDUCATION AND MEDICINE. FEWER THAN TWO APPLICANTS WERE REGISTERED TO EACH JOB IN ENGINEERING, AS OPPOSED TO FOUR 12 MONTHS BEFORE. OVER ONE-HALF OF THE OPENINGS FOR NATURAL SCIENTISTS WERE IN SIX AREAS, AND FOUR APPLICANTS PER OPENING WERE AVAILABLE. DRAFTSMEN WERE IN GREATER DEMAND WITH TWO APPLICANTS PER OPENING. DESPITE THE TIGHTENING JOB MARKET, EMPLOYERS MAINTAINED STRINGENT HIRING SPECIFICATIONS. TO OVERCOME SPECIALIZATION AND OTHER MANPOWER PROBLEMS SOME AREA FIRMS HAVE ESTABLISHED PERSONNEL LEND-LEASE SYSTEMS AND CONSULTANT FIRMS HAVE HIRED RETIREES. (JM)

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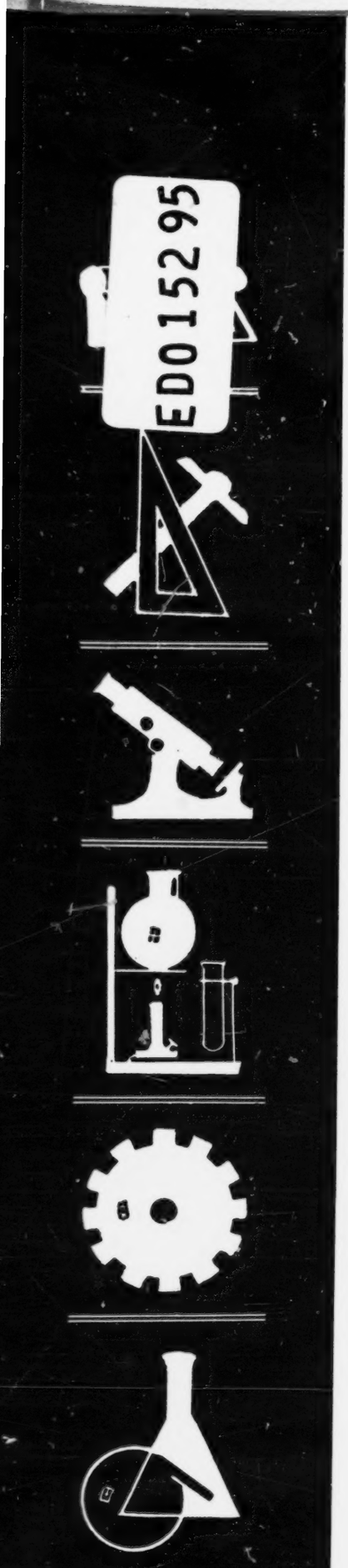

THE CURRENT EMPLOYMENT MARKET

for

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October 1965

U.S. DEPARTMENT OF LABOR
W. Willard Wirtz, Secretary
MANPOWER ADMINISTRATION
BUREAU OF EMPLOYMENT SECURITY
Washington, D.C. 20210

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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BUREAU OF EMPLOYMENT SECURITY
ROBERT C. GOODWIN, ADMINISTRATOR

U.S. Employment Service
Louis Levine, Director

This survey is issued semiannually and was formerly titled Current Labor Market Conditions in Engineering, Scientific, and Technical Occupations. It is based on field reports on current conditions in 30 major labor areas prepared by State employment security agencies affiliated with the Bureau of Employment Security, statistics on job openings for selected engineering, scientific, and technical occupations placed in interarea recruitment by public employment offices throughout the country, and information obtained from various government agencies, professional societies, and other sources. This study was prepared by Norma F. Ausmus and Alvin W. Saile in the Branch of Skill and Industry Surveys, Division of Research and Publications, Office of Manpower Analysis and Utilization of the United States Employment Service.

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CURRENT TRENDS IN DEMAND-SUPPLY SITUATION FOR ENGINEERS, SCIENTISTS, AND TECHNICIANS

January - July 1965

SUMMARY

There has been a continuing increase in the nationwide demand for engineers, draftsmen, and qualified technicians during the first half of 1965. This was indicated by the latest semiannual survey of the demand and supply situation for these occupations in major employment centers conducted by the United States Employment Service and affiliated State employment services.

Factors cited as providing the current market stimuli included increased Government contracting, a rise in unmet needs for Federal facilities in various parts of the country, a continued high level of production in durables manufacturing, and the growth of research and development activities relating to medical and educational services. Although new construction projects have not pushed ahead of 1964 levels, construction-related activity added significantly to the strong market situation.

Demand-supply relationships for draftsmen in the 30 major reporting areas became tighter than at any other time in the 7-year history of the survey. Employment Service activities reflected the improved job market situation for engineers as the number of engineering applicants declined and job openings for engineers increased in the local offices. The employment situation for engineers was the best it had been since the beginning of 1963. Improved job prospects for both medical and industrial support technicians were also in evidence. Only the market situation for chemists and natural scientists failed to respond with any vigor during the months following November 1964, and the relative supply of applicants in these occupations continued to exceed current requirements.

Among durables firms, needs expanded for the development of commercial jetliners and for Federally-financed aerospace activities; other needs came from producers of machinery and equipment, notably metal-cutting machinery, and from producers of steel. Construction requirements included the renovation of existing structures, and new highway, bridge, and public transportation projects.

In the late spring of 1965, the local public employment offices in the 30 major reporting areas had 12,800 applicants registered in engineering, scientific, and technical occupations, the smallest number in 5 years. Applicant supply had dropped by 25 percent from a year earlier,

while jobs listed expanded by 47 percent. There were two applicants to each job opening listed, the same ratio that prevailed during the previous peak demand period noted in mid-1962. During the intervening period, the ratio of applicants to openings in these same areas was sometimes as high as 4 to 1, reflecting layoffs and curtailments in defense and aerospace projects.

Despite the tightening job market situation this spring, employers continued to maintain rigid hiring specifications in job orders. Stringencies continued of personnel with highly specialized training and/or work experience related to specific assignments. In addition, needs for new occupational specialties emerged requiring personnel fully versed in both medicine and electronics.

Such demands contributed to a marked increase in the out-of-area search for technical personnel through the Federal-State employment service network. Locally hard-to-fill openings placed into interarea recruitment by State employment services throughout the Nation jumped by 50 percent from mid-1964. Employers in the 30 major areas accounted for about half of these listings.

The current brisk demand for engineers, draftsmen, and technicians emphasized production, design, and testing skills. Recent college graduates in these fields continued to enjoy definite preference for selection over applicants with experience in unrelated lines. Past peak demand situations differed from present conditions in that the earlier search for personnel was centered around research activities for defense and aerospace. Consequently, requirements for natural scientists, notably physicists, to carry on such research was not as strong currently as in previous periods of rising demand.

In recent months, manpower requirements expanded in some innovative aspects of the service fields of education and medicine. Included were occupations related to the development of audio-visual teaching aids and programed instruction materials, and the merging of electronics with the field of medicine in designing new machines for the detection, treatment, and cure of disease. New occupational specialties emerged requiring developmental personnel fully versed in the medical arts and electronics. Highly specialized technicians, such as the electromicroscopist, were needed to operate the new equipment.

Devotion to a narrow area of specialization has become an increasingly difficult problem in the job market. The overspecialization demanded has restricted job opportunities. Upon completion of narrowly specialized assignments, available applicants found it extremely difficult to get jobs even in related specialties. Mismatching of skills and job specifications has been particularly noticeable among the supporting technical occupations this spring.

To help resolve current manpower problems engineering service firms for a given area have established a "lend-lease system." Personnel are

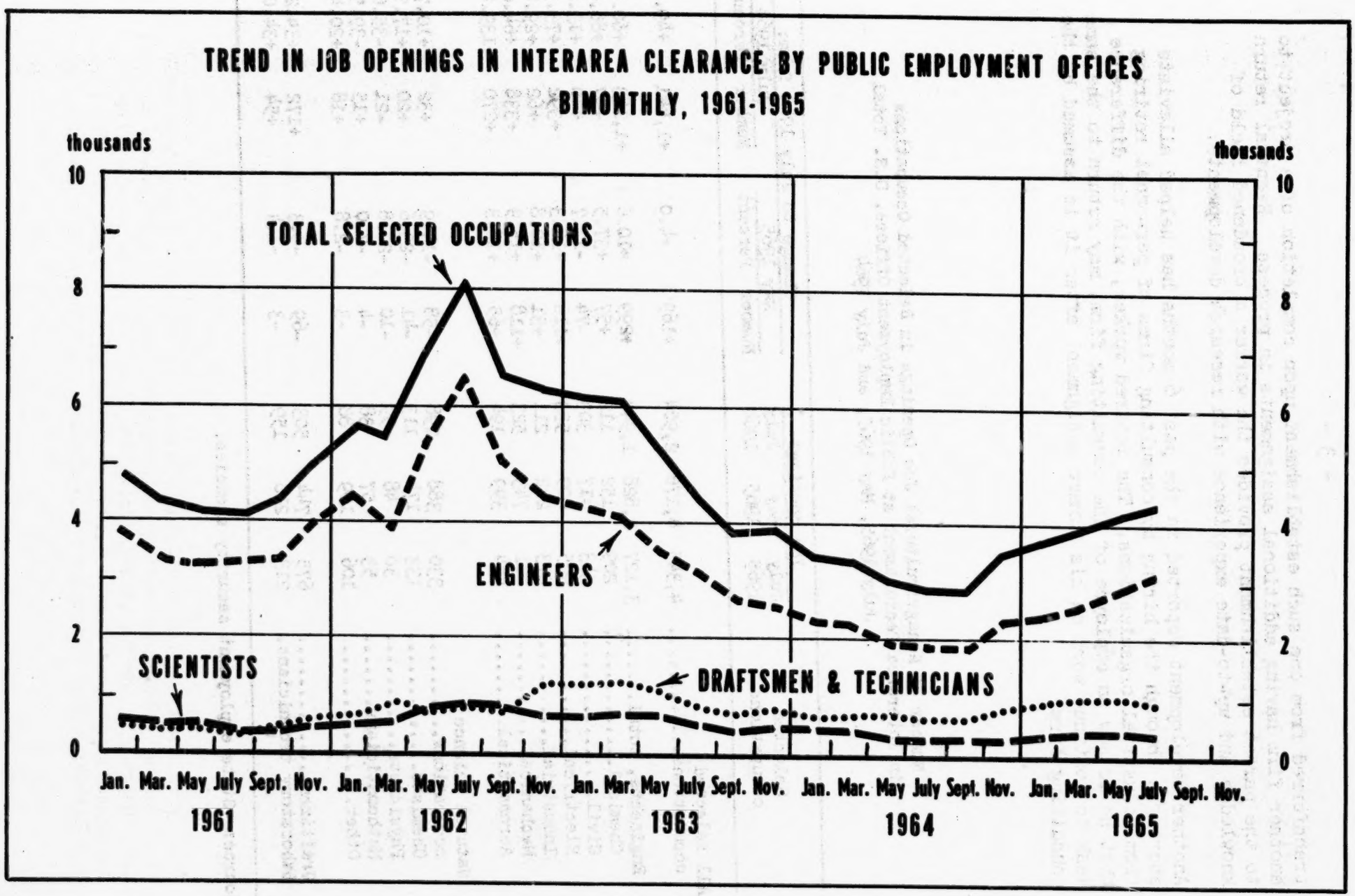
transferred from one such establishment upon completion of a project to another firm having additional assignments in process. Eventual return to the parent establishment provides the worker a broadened field of knowledge and up-to-date experience with research developments.

Another development reported in the past 6 months has helped alleviate shortages through the hiring by consulting firms of personnel retiring from industrial organizations. The retired worker, with the difference that he is now an employee of the consulting firm, may return to the same desk to continue work on his former assignment after it is assumed by the consulting firm.

Number of Nonagricultural Job Openings in Selected Occupations in Interarea Recruitment at Public Employment Offices, U.S. Total July 1965, May 1965, and July 1964

Selected occupations	Job openings			Change to July 1965 from:			
	July 1965	May 1965	July 1964	May 1965		July 1964	
				Number	Percent	Number	Percent
All selected occupations	4,345	4,176	2,904	+169	+4.0	+1,441	+49.6
Engineers, total	3,127	2,828	1,944	+299	+10.6	+1,183	+60.8
Chemical	209	152	112	+57	+37.5	+97	+86.6
Civil	343	417	303	-74	-17.7	+40	+13.2
Electrical	925	809	533	+116	+14.3	+392	+73.5
Industrial	273	242	211	+31	+12.8	+62	+29.4
Mechanical	861	743	523	+118	+15.9	+338	+64.6
Aeronautical	464	399	194	+65	+16.3	+270	+139.2
Natural science occupations	330	388	298	-58	-14.9	+32	+10.7
Chemists	133	174	113	-41	-23.6	+20	+17.7
Physicists	38	48	59	-10	-20.8	-21	-35.6
Mathematicians	53	57	38	-4	-7.0	+15	-39.5
Other	106	109	88	-3	-2.8	+18	+20.4
Draftsmen	675	744	503	-69	-9.3	+172	+34.2
Laboratory technicians	213	216	159	-3	-1.4	+54	+34.0

Source: State employment security agencies.


TREND IN JOB OPENINGS IN INTERAREA CLEARANCE BY PUBLIC EMPLOYMENT OFFICES
BIMONTHLY, 1961-1965
thousands
thousands
10
8
6
4
2
0
TOTAL SELECTED OCCUPATIONS
ENGINEERS
SCIENTISTS
DRAFTSMEN & TECHNICIANS
Jan. Mar. May July Sept. Nov. Jan. Mar. May July Sept. Nov. Jan. Mar. May July Sept. Nov. Jan. Mar. May July Sept. Nov. Jan. Mar. May July Sept. Nov.
1961
1962
1963
1964
1965

ENGINEERS

Needs for engineers in the first half of 1965 were stimulated by renewed Government contracting, continued strength in hard goods manufacturing, and expanded requirements in construction-related activities. The demand generated by these sectors of the economy provided new job opportunities for many applicants.

In the 1963-64 period, applicant supply in public employment offices in the 30 principal areas that conduct detailed surveys of job market conditions for engineers had built up due to curtailed manpower needs in aerospace and electronics.

As the result of recall to former jobs, or the ability of jobseekers to find suitable positions through other sources, local employment service offices in the reporting areas had a smaller offering of candidates in mid-1965 than at any other time in the past 5 years. Applicants registered in these offices dropped to 5,200, some 30 percent fewer than a year earlier. At the same time, engineering job openings listed in these offices rose by 56 percent to 3,000. Fewer than 2 applicants were registered to each job opening listed at the public employment offices, in contrast to a ratio of nearly 4 applicants per vacancy 12 months earlier.

All major engineering divisions shared in the improved 1965 market. Expanded requirements in aerospace and in Federal Government agencies heightened shortages of electronic specialists. The market for mechanical engineers continued brisk. New requirements were in Federal facilities, blast furnaces and rolling mills, auto and auto-related production, machine cutting tools and machinery of all kinds, commercial aircraft production, and service and maintenance activities. Job opportunities were plentiful for aeronautical engineers in the limited number of locations where aircraft facilities have major plants. Competition in the development of commercial jetliners, in addition to expanded aerospace projects, caused job listings to climb above the 400 mark in the 30 reporting areas for the first time since late 1961.

Demand for senior design civil and structural engineers remained strong. They were needed by State and local governments in highway planning, by engineering and architectural services for the renovation of structures, and by shipbuilding facilities.

New demands for industrial engineers this spring included assignments in methods engineering, quality control, inspection, and systems analysis. A few areas reported demand for chemical engineers for work in space research, nuclear power development, and specialized needs for the chemical industry.

Employers found it increasingly difficult to fill their needs as many engineering jobseekers were re-employed and many college graduates were able to secure their first assignments with ease. By summer, State employment services were obliged to extend 3,100 locally hard-to-fill job listings into interarea recruitment, 1,200 more than in July 1964.

Number of Engineering Job Applicants Registered at Public Employment Offices in 30 Major Labor Areas
May 1965, November 1964, and May 1964

Engineering specialty	Active applicants: May 1965 Total	May 1965 With college degree	Nov. 1964	May 1964	Percent change to May 1965 from: Nov. 1964	May 1964
Engineers, total..	5,244	3,000	6,622	7,530	-20.8	-30.4
Metallurgical...	98	74	99	130	-1.0	-24.6
Chemical.....	268	223	353	324	-24.1	-17.3
Civil.....	529	350	593	691	-10.8	-23.4
Electrical.....	1,368	834	1,862	2,073	-26.5	-34.0
Industrial.....	1,089	494	1,291	1,483	-15.6	-26.6
Mechanical.....	1,705	900	2,165	2,554	-21.2	-33.2
Aeronautical....	147	93	229	224	-35.8	-34.4

Source: State employment security agencies.

Number of Engineering Openings Unfilled at Public Employment Offices in 30 Major Labor Areas at end of
May 1965, November 1964, and May 1964

Engineering specialty	Unfilled openings at end of: May 1965	Nov. 1964	May 1964	Percent change to May 1965 from: Nov. 1964	May 1964
Engineers, total..	3,050	2,531	1,947	+20.5	+56.6
Metallurgical...	42	39	21	+7.7	+100.0
Chemical.....	159	145	97	+9.6	+63.9
Civil.....	415	388	316	+7.0	+31.3
Electrical.....	696	650	429	+7.1	+62.2
Industrial.....	328	250	249	+31.2	+31.7
Mechanical.....	986	694	668	+42.1	+47.6
Aeronautical....	409	356	166	+14.9	+146.4

Source: State employment security agencies.

The largest part of this summer's hard-to-fill openings were in aircraft firms for both civilian and Government projects. Most offered excellent pay and specifications frequently were not stringent. Various Federal facilities, including an arsenal, a transportation equipment center, a nuclear power engineering installation, an artillery and weapons center, and a naval facility, also accounted for a large number of the openings in interarea recruitment. Nearly three-fourths of the 900 openings for electrical engineers listed by the 50 State employment services as hard to fill in local areas were in San Jose, Vallejo (Calif.), Picayune (Miss.), Mobile (Ala.), Cape Kennedy and Winter Park (Fla.), and Atlantic City (N.J.). Staffing requirements for a facility in Mississippi were geared to the Saturn space project.

...the engineers' job market in 30 major areas
june 1965

NEW ENGLAND REGION:

Boston, Massachusetts: Demand for engineers with advanced degrees was on the upswing in the spring of 1965 as research and development activities grew increasingly important. Newly emerging fields included the development of programed materials and audio-visual aids for education, and the development of electronic equipment for use in the medical field. Research into the fields of optics associated with deeper space probes has expanded. Government contracting in shipbuilding has also contributed to area activity. Available applicant supply generally consisted of nondegree holders and older applicants lacking training suitable for employer specifications.

Providence-Pawtucket, Rhode Island: A scarcity of well-qualified engineering applicants was reported in a highly selective market. Needs for electrical engineers were among producers of glass products, machine tools, and electrical equipment. Mechanical engineers were sought by producers of heating equipment, machine tools, and shaft seals.

MIDDLE ATLANTIC REGION:

Buffalo, New York: Favorable job prospects for engineers kept pace with the continued uptrend in hard goods manufacturing. Greatest over-the-year growth occurred in blast furnace steel output in primary metals, and in auto production and related stamping activity. There was brisk activity in machine cutting tools. As a result, demand for mechanical engineers was higher than a year ago. Employer specifications emphasized specialized requirements for college degrees and recent experience. Production acquired training was in itself not enough to qualify applicants available in local offices.

New York City, New York: The job market for engineers improved this spring. Current demands originated largely from government or quasi-government agencies and engineering firms engaged in construction-related activities. Although new construction lagged, renovation and updating of structures and growth in utilities and bridge and highway construction activity sparked demand for mechanical engineers experienced in heating, plumbing, air conditioning systems; electrical power and light designers; and structural engineers. The more favorable climate for electrical engineers was due to some pickup in government contracting, and an increased willingness on the part of applicants to relocate. However, some mechanical and electrical engineers released by government contractors following major cutbacks last year

were still unemployed. Nevertheless, there were only between 2 and 3 engineering applicants for each unfilled opening in local public employment offices this spring; there were 11 jobseekers for each such opening a year ago.

Newark, New Jersey: Near balance between applicants and openings prevailed in the spring of 1965. Marked declines from a year ago in the number of applicants occurred in electrical and mechanical specialties. A large number of entry level openings for graduates in mechanical, industrial, and electrical engineering were located at a Federal arsenal. Security clearance was necessary.

Paterson-Clifton-Passaic, New Jersey: Applicants have been disappearing from local offices as expanded business activity locally and opportunities in nearby areas brightened employment prospects. Demand was no longer centered among government contractors. Of the remaining supply, four-fifths were age 35 or older. Half of the mechanical engineers were age 45 or above. Unique skill, exceptional educational background, or particularly valuable experience was the passport for the older engineer to secure current employment.

Philadelphia, Pennsylvania: A strong market for younger engineers capable of specific assignments persisted over the first half of 1965. Mechanical engineers were in demand among engineering service concerns. New research and development contracts contributed to current market strength. Strong demand developed this spring for highway engineers. The release of a few engineers due to production cutbacks by electronics contractors did little to ease the tight market situation. Local offices found employers' hiring attentions directed to other sources since the supply of the desirable younger applicants has been depleted.

Pittsburgh, Pennsylvania: An improved area economy produced a tight job market for engineers this spring. A shrinking supply of applicants became inadequate to fill job openings in all but the industrial engineering category. Opportunities covered the range of durables manufacturing, chemicals, engineering and architectural services, and government. Rigid hiring specifications were maintained by employers. For example, a fabricated pipe producer required at least 5 years' experience in chemical plant instrumentation and design.

SOUTH ATLANTIC REGION:

Baltimore, Maryland: The sharply reduced number of applicants this spring was inadequate for expanded requirements in the mechanical and electrical engineering fields. New needs in electronics contracting reversed a 3-year slowdown. Applicants laid off during the slowdown had entered other occupational fields or secured employment in other industrial activity. A shortage emerged of young engineers with recent degrees specializing in electrical power to meet needs of

construction and architectural and engineering service firms. Demand for mechanical engineers was traced to construction for urban renewal and to a flurry of activity in the metals industry.

Washington, D.C.: The job market for engineers continued tight. Local offices again noted a dwindling in applicant supply and an increase in openings. Government was the major recruiting source. Most openings for Federal agencies were for electrical and mechanical engineers with many available to college graduates at the entry level. Highway and civil engineers were required by local government. Demand was strong for teaching specialists in the various engineering branches for overseas assignments. Small research and development firms, specializing in minute aspects of government contracting, flourished.

Atlanta, Georgia: Available applicants, lacking college degrees, did not measure up to employer specifications. Many of the large number of June college graduates readily secured employment. As in the past, some vacancies existed in an aircraft facility for specialized assignments, or for engineering graduates in support roles. Such needs, not deemed urgent, made job opportunities available only to the "right men."

EAST NORTH CENTRAL REGION:

Detroit, Michigan: Record auto production coupled with growth in employment in other durables manufacturing spurred job hunting in recent months. Many applicants had college degrees but were inexperienced. As employers restricted opportunities to those with qualifying work histories, indications were that production rates were hampered by the shortage of qualified engineers.

Cleveland, Ohio: Openings that developed for several types of electrical, mechanical, and aeronautical engineers in space research since the start of 1965 were cancelled by spring. Nevertheless, the area reported a high demand reflecting an improved area economy in contrast to a year ago. In spite of a decline in applicants, area employers limited the search for talent, remained selective for those with unusual experience, and offered fewer opportunities for on-the-job training. Recent college graduates, preferred in the current market, were but a small part of local office registrants.

Columbus, Ohio: New orders at an aircraft facility stimulated requirements for engineers with appropriate degrees and extensive work histories related to development of missiles guidance control systems. Other needs came from an instruments producing firm seeking mechanical engineers with packaging experience and knowledge of machine shop production, and a firm in the construction machinery and equipment field desiring mechanical engineers with degrees and some experience in design of such items. Applicant supply in local offices has been nearly exhausted.

Cincinnati, Ohio: An improved job market in 1965 reflected growth in diverse economic manufacturing and nonmanufacturing activity over 1964. Openings were widely scattered. Some engineering service firms looked at every engineering applicant that became available through local offices. Although job-seeking activity by engineers was down markedly, rigid specifications maintained by employers indicated their ability to postpone the hiring of engineers for prolonged periods.

Indianapolis, Indiana: Recently listed job openings in local offices were for young college graduates at entry level positions. Long-standing unfilled openings with exacting specifications also contributed to a strong employment picture over the first half of the year. These were in firms in diverse fields such as aircraft parts, electronic components and utilities, primary and fabricated metals, heavy construction and other machinery products, and auto assembly. Opportunities were also available for highway and mechanical engineers with the State government. The dwindling supply of local applicants consisted of many who were between job assignments in civil engineering or who were employed but desired a job change.

Chicago, Illinois: Shortages of engineers of all types but electrical characterized the high level of demand emanating from durables manufacturers in the first half of 1965. Booming auto sales, inventory buildup against a possible steel strike, and government contracting stimulated the job market in recent months. Demand emphasis was for design engineers. Out-migration has heightened the local scarcity of desired talent. Graduates from area and other midwestern universities have been attracted to assignments on the West Coast. Production acquired skills prevailed among the inadequate supply of applicants in local offices.

Milwaukee, Wisconsin: Persistent shortage of engineers over the past 12 months abated a bit this spring, but unfilled job listings continued far in excess of applications in local offices. Job order cancellations by a firm producing spacecraft guidance control apparatus, some layoffs, and the availability of college graduates contributed to the easing. Opportunities were plentiful for trainees. Openings existed mainly in durables manufacturing in a variety of fields such as application, design, research, development, sales, service, supervision, inspection, time study, and systems engineering. Many applicants had college degrees.

WEST NORTH CENTRAL REGION:

Minneapolis-St. Paul, Minnesota: Very favorable employment opportunities developed this spring. Demand for engineers of all types rose substantially in line with growth in manufacturing activities. Computer firms paced employment needs, due in part to staffing for the Apollo project. Optimism among ordnance and electrical machinery firms that suffered moderate employment setbacks over the past 12 months due to

curtailed government contracting, contributed a firmer tone. A high percentage of applicants among local offices held degrees, but the number registered has been quite inflexible. By June, openings for engineers exceeded applicants.

St. Louis, Missouri-Illinois: Chronic shortage of well-qualified engineers plagued area employers. However, needs were currently less urgent. Better than three-fifths of local office engineering openings were for an aircraft facility. Many of these openings had prevailed over the 12-month period, reflecting the exacting nature of specific work history and education demanded. In June 1965, requirements outside of aircraft were primarily in plant or project engineering and machine design. Brisk construction activity promoted an acute shortage of civil engineers experienced in structural design. Mechanical engineers with heating and air conditioning training were in demand. An easing developed in the demand-supply relationship for electronic specialists following staff reduction in a local firm early in the year.

Kansas City, Missouri-Kansas: A stable industrial situation has prevailed in this area for years producing sparse employment opportunities for engineers as indicated by requirements listed with local employment service offices. There have been no major fluctuations in employer needs or applicant supply, with applicants constantly exceeding demand.

EAST SOUTH CENTRAL REGION:

Louisville, Kentucky: Expansion in the number of unfilled openings indicated some additional demand in area this spring. Employers maintained very stiff hiring requirements, including age under 35, college degrees, and specialized work histories suitable to the individual assignments. Recent college graduates were disqualified for lack of experience. Since two-thirds of the engineering applicants available in the public employment offices were over age 35, and firms were unable to lure qualified jobseekers from other areas, it appeared that employers were willing to continue their activities without the desired talent. Better than half of the applicants were employed, seeking other opportunities.

WEST SOUTH CENTRAL REGION:

New Orleans, Louisiana: Upswing in requirements for specialists in aeronautical and mechanical engineering again emanated from area space contractors after a year of hiring lull. Employers found no supply of applicants to meet their exacting requirements. They sought workers with past experience akin to individual assignments. Degrees earned in the too distant past were not acceptable. New college graduates may provide some relief to area employers.

Dallas, Texas: Job opportunities recovered by spring from a lull noted at the start of the year. Local employers sought mechanical engineers. Early in 1965, producers of conventional aircraft in this and nearby areas had furloughed mechanical, industrial, and a few aeronautical engineers for the period of transition to spacecraft and related electronic components activities. Except for the aeronautical engineers, released engineers were to be recalled.

Houston, Texas: Employment prospects remained good in all fields of engineering. A strong demand for qualified applicants came from a wide range of activities, both locally and from other areas. Employers continued their selective practices. Applicants encountered keen competition for choice positions. Advanced degree holders were easily placeable in the current market; those receiving their first degree also enjoyed favorable employer consideration.

MOUNTAIN REGION:

Denver, Colorado: Keen interest by out-of-area aerospace recruiters and the willingness of local applicants to relocate have greatly diminished the high count of engineers registered in local employment service offices since the start of 1965. New local requirements for aerospace were limited to highly specialized engineers not available locally. At the same time, there was an excess of applicants having aerospace-acquired skills who had been laid off in the fall of 1964 and early in 1965 by local aerospace contractors. Activity among consulting engineering firms recently picked up from the low ebb reached last January. More requests were received for civil and structural design engineers, but seasonal requirements for civil engineers were curtailed by labor disputes in construction activities.

PACIFIC REGION:

Seattle, Washington: Few applicants were available in local offices to respond to large-scale recruitment by an aircraft facility. Most of the engineers released during curtailments in 1964 had dispersed, before the increased demand arose. Nearly half of the high level of demand in the first half of 1965 was for aeronautical engineers. Significant numbers of electrical, industrial, and mechanical engineers were needed. Degrees were specified. Duties involved design of various aircraft parts. Other openings received in May involved design and installation of industrial utilities. Backgrounds in industrial construction and maintenance were required.

Portland, Oregon-Washington: Area shortages grew tighter for mechanical and civil engineers in the first half of 1965. Demand expanded with manufacturing and construction activities, including the repair of flood damage early in the year. Employers maintained rigid job specifications. With more job orders and fewer applicant registrations than last spring, employers found the field from which to select considerably narrowed. However, little effort was directed to out-of-area recruiting.

San Francisco-Oakland, California: A reversal of the 2-year downtrend among aerospace and electronics activities and continued strong tone in construction put job market for engineers on a firmer basis during the first half of 1965. Employers sought specialization. Many of the job openings for mechanical engineers required experience in process piping, or in heating, ventilating, and air conditioning. A heavy demand was reported for electrical design engineers. Electronics firms required engineers in circuit design, servomechanisms, or microwave design but few local applicants could qualify. Openings existed in a cross section of manufacturing for industrial engineers with degrees and experience in time study, quality control, work sampling, etc. Senior design civil and structural engineers were in heavy demand. Demand evident for chemical engineers with a degree in chemical engineering, chemistry, or physics was reported hard-to-fill by local employment service offices. Area offered good opportunities to this year's college graduates in all engineering fields.

Los Angeles-Long Beach, California: A tightening of job market conditions during the first half of 1965 contrasted with the loose situation for engineers in 1964. The excess of applicants with aerospace experience at the start of 1965 waned as jobseekers either were recalled by former employers or found other employment. Aerospace firms, operating with fewer personnel, continued to seek some highly specialized applicants. Efforts towards diversification were in evidence in this industry. Non-defense industrial activity strengthened current employment opportunities. Major new needs came from an aircraft firm seeking aeronautical, electrical, and mechanical engineers for the design, development, and modification of commercial jetliners. Advanced degrees were preferred and 2 to 10 years' specialized work histories in aircraft were demanded. Hiring standards for electrical engineers were stringent; 3 years' experience in analog and digital techniques, pulse and frequency modulation, environmental simulation, were required by one firm. Mechanical engineers thoroughly trained in industrial production enjoyed favorable job prospects. Shortage of experienced civil engineers for highway projects and a consulting service for the construction of a military base were reported. Local offices in May had four engineering applicants for each opening, compared to six applicants the previous year. Slightly less than half were degree holders.

NATURAL SCIENTISTS

Renewed vigor in Government contracting in aerospace and the continuing upsurge in other economic activity this spring did not stimulate any appreciable spurt in openings listed for natural scientists in research. The volume of job openings for these scientists in the public employment offices of the 30 principal areas has continued below 500 since the start of 1964. This spring over half the openings were reported in six areas: New York, Newark, Washington, D.C., Chicago, Seattle, and Los Angeles-Long Beach.

Some reduction was reported in applicant supply among the 30 reporting areas as the drop in the number of natural scientist jobseekers first noted in the fall of 1964 continued. The local employment service offices had 1,900 applicants this spring, just under 4 applicants to each vacancy, a ratio slightly more favorable to jobseekers than at any other time in the preceding year. Applicant supply was largest in some of the same areas in which demand was heaviest. More than one half the applicant supply was located in five centers: New York, Newark, Washington, D.C., San Francisco-Oakland, and Los Angeles-Long Beach.

Employers were interested this spring in graduating chemists, in mathematicians for actuarial accounting and as programer trainees, and in computing analysts with experience in large scale digital and peripheral hardware systems. Other opportunities were limited to specialists with either extensive experience and/or a Ph.D. Needs were geographically scattered among aircraft, electronics, and Federal Government agencies. The scarcity of applicants capable of meeting high employer standards kept jobs unfilled for prolonged periods. In some cases, openings existed for over a year.

Incompatibility between demand and supply continued among the various areas. While overall interest in college graduates with a major in mathematics appeared good, recent mathematics graduates sought public employment office aid in unusually large numbers in New Orleans and Dallas. Although demand lessened in San Francisco in biological sciences, and jobseeking biologists exceeded openings, such jobs were available in the State of Washington.

The demand-supply relationship for chemists has shown little fluctuation with economic trends recently. Job openings and applicants registered have remained equal to the number 6 months and a year earlier.

Few vacancies for physicists and mathematical scientists were listed. Local employment services found employer needs were extremely hard to fill. For example, in San Jose (Calif.) applicants with advanced degrees plus backgrounds in atomic physics, optical properties of solids, or underwater acoustics were sought for research projects.

DRAFTSMEN

Brightened job prospects for most types of draftsmen characterized a tight demand-supply situation over the first half of 1965. Progressive improvement in opportunities for draftsmen in the 30 major labor areas has continued since last summer. The current increase in demand again reflected the continuing high level of durables manufacture, including Government contracts, and a stronger than seasonal increase in construction-related activity, expansion in job shop, and in consulting services.

In mid-1965, there were more openings for draftsmen and fewer applicants for these jobs than at any other time since the beginning of this series in 1958. Jobs listed in the public employment offices of the 30 reporting areas rose from a year earlier by some 60 percent to 1,900; applicants available dropped by 35 percent to 3,000.

As the ratio of applicants to job openings for the 30 major areas dropped to less than 2 to 1 compared with nearly 4 to 1 a year ago, wide differences continued to be reported from area to area. These occurred both in regard to the relative size of local supply and demand and to the level of skill and kind of specialization being sought.

For example, the public employment offices in some reporting areas had more unfilled job openings than applicants this spring. These areas were: Buffalo, Cleveland, Columbus, Cincinnati, Chicago, Indianapolis, Milwaukee, St. Louis, Seattle, and Washington, D.C. By contrast, in the Los Angeles-Long Beach area, there were over 11 applicants to each job opening for a draftsman, despite a sizable drop in the number of applicants due to recall by former employers since the first of the year. Applicant supply in this area had built up sharply during 1964 because of curtailments by employers with Government contracts. Other areas with an excess of draftsmen seeking jobs over openings listed were Denver, Detroit, and Houston.

Illustrating the diversity of opportunities available, in some areas, employers sought workers for trainee positions, while in others, job specifications were becoming more restrictive despite the tighter job market. A Federal map making service in suburban Washington, D.C., utilized the public employment service to recruit 300 cartographer trainees from local schools. Baltimore, St. Louis, and Milwaukee also had openings for draftsmen trainees. Concern has arisen in Boston over the fact that fewer and fewer persons are being trained there in this work.

But in other areas, technological advances have tended to create more stringent job specifications for draftsmen. Demand centered on recently trained personnel with specialties in structural, electrical, mechanical, and architectural design. Chicago reported employers were increasingly obliged to seek drafting talent outside the area to fill highly specialized openings. In this area, for example, architectural draftsmen familiar with film and photography were sought for a laboratory and a

scientific instruments firm. Other areas also seeking substantial numbers of highly specialized personnel were Cleveland, San Francisco-Oakland, Denver, St. Louis, and New York.

Also indicating tightening in the job market for draftsmen among the 30 reporting areas was the extent that openings were directed towards out-of-area recruitment through the Federal-State employment service network. Over a fourth of the total job openings in these areas for draftsmen were extended into interarea recruitment in an attempt to find qualified workers from other locations this spring. Nearly three-fourths of the 700 jobs in interarea recruitment were concentrated in the 30 major labor areas. Six months earlier, the bulk of such openings were widely scattered over 43 States. Among the reporting areas, heaviest demand was in Washington, D.C., New York City, Chicago, Seattle, St. Louis, Los Angeles-Long Beach, and Milwaukee. Outside the 30 major areas, other points of strong demand were Burlington (Vt.), New London (Conn.), York (Pa.), Melbourne (Fla.), Beloit (Wis.), and San Jose (Calif.).

Renewed vigor in aerospace produced more abundant job opportunities for draftsmen in the Nation's Capital, and in Los Angeles-Long Beach. Needs for a large aircraft facility predominated in Seattle, and accounted for the greatest share of openings in St. Louis. New York City was the scene of unusually strong seasonal requirements from construction contractors. In Milwaukee and Chicago, high level overall industrial activity and manufacturing spurred employer needs for draftsmen.

LABORATORY TECHNICIANS AND ASSISTANTS

Employers in the 30 major reporting areas encountered a tighter job market for laboratory technicians and assistants in mid-1965 than at any time in the past 3 years. In addition, very real labor demand-supply imbalances continued to exist in the broadly-diversified laboratory technicians and assistants classification.

Applicants registered at the public employment offices ranged from the individual with some background in science or some on-the-job experience in a laboratory to the highly qualified, professionally prepared person. They varied from the entry level, service-type laboratory helper to the medical technologist, certified by the Registry of Medical Technologists of the American Society of Clinical Pathologists (ASCP). This is the specialist who has undergone a specifically delineated 4-year program of study at collegiate level including 12 consecutive months in a school of medical technology approved by the American Medical Association. The supply of helper-type laboratory assistants consistently tends to be larger than the demand. Conversely, well-qualified laboratory workers at the professional level holding degrees or certification in certain fields of specialization, particularly those related to medicine, are in short supply.

In May 1965, there were four applicants registered at the public employment offices in the reporting areas for each opening listed for a laboratory technician or assistant, fewer than at any time after May 1962, when the ratio was 3 to 1. During the intervening period, the ratio of applicants to openings in these same areas was usually between 5 and 6 jobseekers to each unfilled job.

In the latter half of 1962 and in 1963, the supply of industrially-oriented jobseeking laboratory technicians was increased due to cutbacks in aerospace and defense-related industries. There was little change in the overall level of these applicants in 1964. In recent months, the upturn in demand for engineers, scientists, draftsmen, and supporting personnel for durables manufacture has also affected the job market for technicians for industrial laboratories.

Increased demand resulted in a drop from 6 months ago in applicant supply and an increase in job openings for technicians in over three-fifths of the reporting areas. Greatest changes occurred in Denver and San Francisco-Oakland. The number of applicants dropped in Denver due partly to recruitment there for out-of-State aerospace activities. In San Francisco-Oakland, in addition to a greater than usual shortage of licensed medical technologists, industrial openings existed in chemical and oil firms. Locally hard-to-fill industrial job openings placed in the Federal-State interarea recruitment system in the summer of 1965 were for scientific helpers, chemist's assistants, propellant sampling technicians, research assistants, testers, and quality control trainees.

While needs for technicians with industrial skills were on the rise, the long-time stringencies for specialized medical technicians continued to account for the bulk of all requirements. As more hospitals and other medical service facilities are built to serve a growing population, and as new techniques are applied to the treatment of disease, the demand for medical technicians continues to increase nationwide. Many reporting areas, including New York and Boston, where job openings in the local employment service offices were greatest, suffered chronic shortages of these workers. More than four-fifths of the laboratory technician openings in interarea recruitment were in medical specialties, with most employers seeking medical technologists, ASCP, or workers with college degrees or State licenses.

appendix

Technical Notes

Information in this report is based chiefly on two kinds of data, both prepared in the United States Employment Service of the Bureau of Employment Security. Since January 1957, the Bureau has been publishing reports on the number of job openings in a group of selected occupations[1/] placed in interarea recruitment by public employment offices. The source of information on openings in interarea recruitment is the Inventory of Job Openings, published every 2 weeks by each State employment security agency. These inventories list all openings currently in interarea recruitment (a process of matching workers in one area with jobs in other areas) by affiliated State agencies.

Supplementary data on the same occupations have been collected from the employment offices in 30 of the largest labor areas (identified on the following page) since 1958. These labor area reports provide information on the local demand-supply relationships for engineering, scientific, and technical personnel in the area.

The demand-supply relationship in the selected categories is not always fully indicated by the numerical data. Active applications or registrations show the number of individuals in the selected occupations who apply for work at public employment offices. In a like manner, openings received and unfilled at the end of the month are not complete measures of demand since they cover only job orders placed with public employment offices. Despite these limitations, the data provide a useful indication of the demand-supply trend and its nature.

1/ The occupations covered and the appropriate code number from the Dictionary of Occupational Titles include: Engineers, metallurgical, and metallurgists (0-14), engineers, chemical (0-15), engineers, civil (0-16), engineers, electrical (0-17), engineers, industrial (0-18), engineers, mechanical (0-19), engineers, aeronautical (0-19.03), engineers, mining (0-20), chemists (0-07), natural scientist, n.e.c. (0-35), draftsmen (0-48), and laboratory technicians and assistants (0-50).

List of Thirty Major Labor Areas by Regions

New England:

Boston, Massachusetts
Providence-Pawtucket, Rhode Island

Middle Atlantic:

Buffalo, New York
New York, New York
Newark, New Jersey
Paterson-Clifton-Passaic, New Jersey
Philadelphia, Pennsylvania
Pittsburgh, Pennsylvania

East North Central:

Cincinnati, Ohio
Cleveland, Ohio
Columbus, Ohio
Indianapolis, Indiana
Chicago, Illinois
Detroit, Michigan
Milwaukee, Wisconsin

West North Central:

Minneapolis-St. Paul, Minnesota
Kansas City, Missouri-Kansas
St. Louis, Missouri-Illinois

South Atlantic:

Baltimore, Maryland
Washington, D. C.
Atlanta, Georgia

East South Central:

Louisville, Kentucky

West South Central:

New Orleans, Louisiana
Dallas, Texas
Houston, Texas

Mountain:

Denver, Colorado

Pacific:

Seattle, Washington
Portland, Oregon-Washington
Los Angeles-Long Beach, California
San Francisco-Oakland, California

tables

Table I. Trend in Job Openings Placed in Interarea Recruitment by Public Employment Offices, January 1956-1958, and Bimonthly, January 1959-July 1965

Month and year	All occupations	Professional & managerial	Selected occupations 1/				
			Total	Engineers	Scientific	Draftsmen	Technicians
Jan. 1956.....	27,887	12,845	6,803	4,792	435	1,361	215
Jan. 1957.....	35,629	14,498	8,993	6,349	389	1,988	267
Jan. 1958.....	14,665	7,726	2,582	1,817	245	315	205
Jan. 1959.....	16,042	10,530	5,426	4,386	489	377	174
March.....	17,960	10,820	5,473	4,278	576	391	228
May.....	23,232	12,828	5,635	4,387	602	402	244
July.....	20,559	10,112	5,315	4,128	486	495	206
Sept.....	21,414	10,140	6,320	5,096	500	548	176
Nov.....	21,101	11,740	6,585	5,193	600	616	176
Jan. 1960.....	19,735	11,834	5,817	4,389	648	605	175
March.....	21,286	12,611	5,167	3,927	587	442	211
May.....	19,839	11,217	4,710	3,589	550	364	207
July.....	17,480	9,589	4,401	3,489	483	272	157
Sept.....	15,380	8,137	4,453	3,591	492	201	169
Nov.....	15,445	8,310	4,605	3,697	471	248	189
Jan. 1961.....	17,954	12,033	4,799	3,835	516	296	152
March.....	17,489	11,515	4,253	3,395	454	236	168
May.....	16,121	9,828	4,097	3,255	432	244	166
July.....	16,991	9,830	4,078	3,301	393	192	192
Sept.....	16,712	8,740	4,262	3,337	433	230	262
Nov.....	18,579	9,198	4,975	3,859	503	358	255
Jan. 1962.....	21,880	13,966	5,719	4,487	584	446	202
March.....	24,212	14,295	5,473	3,985	602	539	347
May.....	28,856	17,823	6,909	5,342	821	497	249
July.....	27,387	15,592	8,069	6,463	805	461	340
Sept.....	24,286	13,069	6,594	5,008	807	560	219
Nov.....	23,739	13,446	6,363	4,517	633	960	253
Jan. 1963.....	23,749	14,497	6,115	4,236	638	861	380
Mar.....	25,006	16,266	6,005	4,042	694	930	339
May.....	24,860	14,718	5,278	3,481	643	816	338
July.....	21,013	11,475	4,481	3,133	471	636	241
Sept.....	19,621	9,276	3,839	2,638	424	532	245
Nov.....	20,931	10,811	3,872	2,574	476	638	184
Jan. 1964.....	18,978	11,082	3,486	2,324	469	497	196
Mar.....	17,741	9,730	3,385	2,267	434	500	184
May.....	20,247	10,932	3,060	1,985	356	507	212
July.....	18,995	9,854	2,904	1,944	298	503	159
Sept.....	18,145	7,715	2,815	1,842	316	463	194
Nov.....	20,236	8,188	3,496	2,276	349	667	204
Jan. 1965.....	22,118	10,609	3,695	2,364	421	691	219
March.....	25,352	12,889	3,909	2,560	392	755	202
May.....	29,923	14,671	4,176	2,828	388	744	216
July.....	28,530	13,418	4,345	3,127	330	675	213

1/ Data since September 1959 will differ from those previously published because of the exclusion of technical writers from the selected occupations.

Source: State employment security agencies.

Table II, Part A. Number of Active Applicants Registered in Selected Engineering Occupations by Public Employment Offices in 30 Major Labor Areas
May 1965, November 1964, and May 1964

Labor area	Engineers total			Electrical			Industrial			Mechanical 1/		
	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964
Total.....	5,244	6,622	7,530	1,368	1,862	2,073	1,089	1,291	1,483	1,852	2,394	2,778
Atlanta.....	44	43	51	9	6	10	11	9	4	21	22	27
Baltimore.....	47	110	135	15	45	56	7	22	26	5	26	46
Boston.....	345	385	834	102	85	237	108	104	162	85	111	311
Buffalo.....	136	160	138	18	25	17	23	41	36	69	71	57
Chicago.....	166	251	361	62	106	109	35	47	75	34	62	126
Cincinnati.....	32	28	65	8	3	15	8	13	17	6	9	27
Cleveland.....	54	56	78	10	13	18	13	8	12	20	26	31
Columbus, Ohio.....	16	32	49	5	6	8	4	7	8	5	13	26
Dallas.....	115	138	125	28	39	28	28	32	32	33	45	46
Denver.....	114	306	155	25	82	30	18	62	20	39	117	78
Detroit.....	215	133	198	43	25	24	49	35	40	74	47	102
Houston.....	61	72	100	4	11	14	13	14	12	22	17	28
Indianapolis.....	40	33	60	8	6	20	6	8	17	15	16	16
Kansas City.....	42	31	19	10	8	3	12	9	5	17	5	4
Los Angeles-Long Beach.....	1,586	1,988	1,588	432	638	477	291	314	274	669	886	647
Louisville.....	60	63	51	13	8	6	14	15	10	23	24	20
Milwaukee.....	121	126	128	18	12	23	24	28	36	55	58	45
Minneapolis-St. Paul.....	82	93	91	20	23	15	13	13	26	32	35	28
Newark, N.J.....	257	268	367	75	85	117	68	48	72	73	85	118
New Orleans.....	24	25	46	6	5	9	3	3	9	8	7	10
New York.....	564	872	1,031	188	271	343	91	158	188	176	264	352
Paterson-Clifton-Passaic...	118	186	249	40	65	84	20	36	41	43	59	107
Philadelphia.....	218	228	429	61	51	132	68	70	112	62	89	138
Pittsburgh.....	66	86	162	4	14	30	18	23	50	22	19	42
Portland, Oreg.....	35	50	44	6	3	7	4	12	9	10	21	11
Providence-Pawtucket.....	43	45	54	3	8	9	13	11	16	21	19	22
St. Louis.....	90	102	148	31	31	42	12	20	26	32	31	54
San Francisco-Oakland.....	403	467	421	85	117	99	84	88	78	140	152	141
Seattle.....	52	101	214	9	16	47	12	26	55	16	23	79
Washington, D.C.....	98	144	139	30	55	44	19	15	15	25	35	39

1/ Includes aeronautical.

Source: State employment security agencies.

Table II, Part B. Number of Active Applicants Registered in Selected Non-Engineering Occupations by Public Employment Offices in 30 Major Labor Areas, May 1965, November 1964, and May 1964

Labor area	Chemists			Other natural scientists			Draftsmen			Laboratory technicians		
	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964
Total.....	800	841	835	1,090	1,210	1,227	2,997	4,080	4,654	2,657	2,986	2,811
Atlanta.....	4	6	4	2	5	7	15	19	6	15	19	31
Baltimore.....	12	11	15	3	13	10	36	90	95	45	59	62
Boston.....	47	35	67	39	72	89	77	148	470	116	132	396
Buffalo.....	30	24	19	32	25	44	58	78	65	102	87	104
Chicago.....	40	59	54	25	61	50	79	166	104	166	171	122
Cincinnati.....	8	2	12	2	4	11	26	36	63	22	23	41
Cleveland.....	12	11	6	6	4	6	36	37	54	38	37	51
Columbus, Ohio.....	5	3	5	4	6	7	17	11	53	23	14	23
Dallas.....	11	13	11	28	40	27	40	44	48	45	43	48
Denver.....	9	11	6	30	22	33	65	150	92	116	186	98
Detroit.....	25	22	21	27	27	23	117	78	220	70	69	79
Houston.....	16	20	24	48	34	38	47	32	25	63	71	43
Indianapolis.....	8	2	9	9	7	6	17	19	9	22	21	16
Kansas City.....	5	11	8	12	9	6	13	19	25	15	29	15
Los Angeles-Long Beach.....	156	135	129	226	300	165	1,136	1,504	1,113	496	497	368
Louisville.....	15	16	27	12	5	11	25	20	11	21	54	23
Milwaukee.....	27	33	38	40	24	43	28	29	13	18	17	8
Minneapolis-St. Paul.....	16	33	11	44	34	51	61	85	90	64	40	52
Newark, N.J.....	52	60	59	38	25	31	79	88	165	96	136	94
New Orleans.....	10	5	7	16	21	31	27	16	27	23	27	21
New York.....	125	144	113	199	233	299	406	623	805	309	349	347
Paterson-Clifton-Passaic.....	22	18	28	8	18	15	34	52	94	47	58	55
Philadelphia.....	24	15	31	23	15	20	94	157	325	156	142	192
Pittsburgh.....	7	14	16	19	18	17	57	68	98	69	122	135
Portland, Oreg.....	6	2	20	10	2	11	47	42	39	20	42	31
Providence-Pawtucket.....	1	7	5	3	2	1	17	24	17	23	20	17
St. Louis.....	23	16	17	12	10	12	50	87	124	51	45	26
San Francisco-Oakland.....	48	62	42	54	61	45	227	253	226	285	357	199
Seattle.....	11	22	8	18	16	19	25	52	112	39	32	43
Washington, D.C.....	25	29	23	101	97	99	41	53	66	82	87	71

Source: State employment security agencies.

Table III, Part A. Number of Unfilled Openings in Selected Engineering Occupations Listed by Public Employment Offices in 30 Major Labor Areas, End of Month, May 1965, November 1964, and May 1964

Labor area	Engineers total			Electrical			Industrial			Mechanical 1/		
	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964
Total.....	3,050	2,531	1,947	696	650	429	328	250	249	1,395	1,050	834
Atlanta.....	15	15	6	0	1	1	2	0	1	9	9	4
Baltimore.....	49	11	11	27	6	1	0	0	2	17	2	2
Boston.....	33	23	19	9	7	1	5	0	2	14	7	12
Buffalo.....	100	80	93	18	28	25	10	9	12	50	30	35
Chicago.....	204	173	178	33	29	23	45	35	46	82	70	84
Cincinnati.....	12	33	19	3	28	3	1	0	4	6	4	9
Cleveland.....	33	14	31	2	3	4	2	1	5	17	2	13
Columbus, Ohio.....	51	21	18	7	4	6	7	2	1	29	8	7
Dallas.....	32	13	66	14	2	11	4	4	9	7	2	30
Denver.....	6	3	7	1	0	3	1	0	0	1	0	2
Detroit.....	7	24	15	0	10	0	0	1	5	4	10	8
Houston.....	41	39	35	7	5	6	4	6	3	11	14	14
Indianapolis.....	72	42	72	11	9	11	14	5	7	28	14	24
Kansas City.....	7	9	14	1	3	0	4	4	6	0	1	4
Los Angeles-Long Beach.....	411	368	254	128	168	106	18	12	21	213	129	81
Louisville.....	62	37	36	6	2	0	16	9	11	26	15	14
Milwaukee.....	197	254	210	43	63	47	23	29	23	95	116	96
Minneapolis-St. Paul.....	104	59	45	20	12	9	20	10	9	37	21	20
Newark, N.J.....	165	74	88	46	9	13	35	14	20	59	28	33
New Orleans.....	117	54	23	12	4	3	12	2	2	72	25	13
New York.....	226	142	94	75	37	33	13	6	6	85	61	33
Paterson-Clifton-Passaic....	33	44	25	12	6	10	4	14	4	14	21	6
Philadelphia.....	47	95	29	21	10	3	4	6	0	19	19	24
Pittsburgh.....	130	54	59	19	4	12	4	6	5	62	26	23
Portland, Oreg.....	15	17	8	1	5	1	3	2	0	7	4	5
Providence-Pawtucket.....	23	25	26	7	5	4	3	3	5	8	10	11
St. Louis.....	264	279	252	25	22	29	12	19	16	176	178	171
San Francisco-Oakland.....	118	129	63	21	34	13	11	8	6	42	44	19
Seattle.....	242	221	0	62	74	0	33	16	0	138	127	0
Washington, D.C.....	234	239	151	65	60	51	18	27	18	67	53	37

1/ Includes aeronautical.

Source: State employment security agencies.

Table III, Part B. Number of Unfilled Openings in Selected Non-Engineering Occupations Listed by Public Employment Offices in 30 Major Labor Areas, End of Month, May 1965, November 1964, and May 1964

Labor area	Chemists			Other natural scientists			Draftsmen			Laboratory technicians		
	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964	May 1965	Nov. 1964	May 1964
Total	265	229	268	218	231	183	1,921	1,320	1,184	630	582	556
Atlanta	3	0	0	0	4	0	4	6	25	7	5	12
Baltimore	0	0	1	1	0	1	35	16	4	5	12	6
Boston	3	5	15	3	3	10	44	14	14	79	70	45
Buffalo	13	0	11	4	0	2	83	74	53	11	2	15
Chicago	22	24	42	4	2	3	199	148	194	56	69	48
Cincinnati	2	1	4	0	0	0	36	29	40	9	5	5
Cleveland	1	1	1	0	0	2	60	25	36	20	23	27
Columbus, Ohio	3	2	2	10	4	1	39	22	9	7	4	4
Dallas	2	0	5	4	3	4	17	16	24	5	1	12
Denver	1	0	2	0	0	4	11	2	8	29	24	52
Detroit	0	4	0	0	2	1	15	16	12	20	9	15
Houston	4	4	4	6	8	4	9	12	22	5	8	9
Indianapolis	0	4	4	2	1	2	26	9	24	15	6	20
Kansas City	7	0	0	2	1	0	4	9	10	9	1	3
Los Angeles-Long Beach	29	19	19	21	48	35	104	86	69	49	39	8
Louisville	.10	10	4	1	0	1	22	14	7	15	6	5
Milwaukee	14	11	21	10	12	14	102	47	77	14	10	14
Minneapolis-St. Paul	15	7	14	5	9	10	58	32	41	29	20	26
Newark, N.J	29	33	26	4	8	5	80	58	43	37	29	24
New Orleans	3	3	2	7	6	0	30	31	22	9	11	4
New York	59	57	51	15	29	23	235	104	98	95	111	112
Paterson-Clifton-Passaic	8	11	6	2	2	2	16	13	14	1	4	5
Philadelphia	1	4	2	2	0	0	31	32	10	15	28	5
Pittsburgh	16	7	9	14	4	6	54	54	36	11	8	10
Portland, Oreg	0	1	1	1	0	0	13	9	12	10	7	5
Providence-Pawtucket	0	2	2	0	0	0	5	14	8	2	9	2
St. Louis	4	7	12	7	10	7	123	153	175	4	10	20
San Francisco-Oakland	6	5	6	4	5	4	74	53	39	38	37	21
Seattle	2	0	0	36	14	0	168	158	2	7	9	1
Washington, D.C	8	7	2	53	56	42	224	64	56	17	5	21

Source: State employment security agencies.